UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/622,955	09/19/2012	Jonghoon Baek	014722USA/DISPLAY/AHRDWR/	5479

44257 7590 12/07/2016

PATTERSON & SHERIDAN, LLP - - Applied Materials
24 Greenway Plaza, Suite 1600
HOUSTON, TX 77046

EXAMINER
MILLER, JR, JOSEPH ALBERT

ART UNIT	PAPER NUMBER
1715	

NOTIFICATION DATE	DELIVERY MODE
12/07/2016	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

Pair_Eofficeaction@pattersonsheridan.com
psdocketing@pattersonsheridan.com

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte JONGHOON BAEK, BEOM SOO PARK, JOHN M. WHITE, SHINICHI KURITA, SAM H. KIM and HSIAO-LIN YANG

Appeal 2015-002132
Application 13/622,955
Technology Center 1700

Before JEFFREY T. SMITH, WESLEY B. DERRICK, and JEFFREY R. SNAY, *Administrative Patent Judges*.

SNAY, *Administrative Patent Judge*.

DECISION ON APPEAL[1]

STATEMENT OF THE CASE

Appellants[2] appeal under 35 U.S.C. § 134(a) from the Examiner's decision rejecting claims 1–20. We have jurisdiction under 35 U.S.C. § 6(b).

We affirm.

---

[1] We cite to the Specification ("Spec.") filed Sep. 19, 2012; Final Office Action ("Final Act.") dated Apr. 17, 2014; Examiner's Answer ("Ans."); and Appellants' Appeal Brief ("App. Br.") and Reply Brief ("Reply Br.").
[2] Appellants identify Applied Materials, Inc. as the real party in interest. App. Br. 3.

Background

The subject matter on appeal relates to a method for measuring plasma conditions in a capacitively coupled plasma ("CCP") processing chamber. Spec. ¶ 2. Claim 1 is illustrative and is reproduced below from the Claims Appendix to the Appeal Brief as follows:

> 1. A method, comprising:
> delivering RF power from an RF power source through a match network to a backing plate of a capacitively coupled plasma chamber;
> igniting a plasma within the capacitively coupled plasma chamber; and
> measuring one or more phases of second and third harmonics of the plasma at a location spaced from the match network.

Rejections

The Examiner maintained the following grounds of rejection:[3]

I. Claims 1, 4–6, 8, 9, 11, 13, 14, 16, and 19 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Choi,[4] Johnson,[5] and Quon.[6]

II. Claims 2, 3, 7, 10, 12, 13, 15, 17, 18, and 20 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Choi, Johnson, Quon, and Park.[7]

---

[3] Final Act. 2–6; Ans. 2–5.
[4] US 2008/0118663 A1, published May 22, 2008 ("Choi").
[5] US 6,313,584 B1, issued Nov. 6, 2001 ("Johnson").
[6] US 2004/0135590 A1, published Jul. 15, 2004 ("Quon").
[7] US 2008/0074255 A1, published Mar. 27, 2008 ("Park").

OPINION

I

With regard to Rejection I, Appellants argue the claims as a group, relying on limitations that are common to independent claims 1, 6, and 19. *See* App. Br. 7–11. We, therefore, limit our discussion to representative claim 1, and decide the propriety of Rejection I based on the representative claim alone.

After having considered the evidence presented in this Appeal and each of Appellants' contentions, we are not persuaded that Appellants identify reversible error, and we sustain the Examiner's § 103(a) rejection for the reasons expressed in the Final Action, the Answer, and below.

As is relevant to Appellants' arguments on appeal, the Examiner found that Choi discloses a CCP method in which RF power is delivered from a power source through a match network to a plasma chamber backing plate, and igniting a plasma within the chamber. Final Act. 2. The Examiner found that Johnson teaches "that it is useful to control a plasma in a capacitively coupled system by measuring harmonics of a plasma coupling element such as an electrode, wherein the harmonics include any of at least the first five harmonics." *Id.* (citing Johnson at col. 1, ll. 30–56; 19, ll. 25–50; col. 20, ll. 37–46; Fig. 13A). Acknowledging that Johnson does not teach measuring the phase of harmonics, the Examiner found that Quon teaches that it was known to measure the phase of harmonics for monitoring and controlling plasma in plasma processing systems. *Id.* at 3; Ans. 6.

Appellants do not dispute the foregoing findings. *See* App. Br. 7–12; Reply Br. 2–4. However, Appellants argue that Quon identifies a number of drawbacks associated with known plasma monitoring techniques that

measure the phase of harmonics and, for that reason, "teaches away from using these measurements." App. Br. 7 (citing Quon ¶¶ 10, 12, 13). As Appellants point out, *id.* at 8–9, Quon states in the referenced passages that measuring harmonic phases can involve "the difficulty of extracting a small plasma resistance from a relatively large circuit resistance," Quon ¶ 13, and that "it can be difficult to obtain meaningful measurements when noise interferes with low-amplitude RF signals" such as harmonics produced in the plasma, *id.* ¶ 12. Based on these potential drawbacks noted in Quon, Appellants argue that Quon "does not suggest the desirability of measuring a harmonic phase," App. Br. 8, "discourages a person having ordinary skill from executing the methods stated in the claims," *id.* at 9, and leads the skilled artisan "in a direction divergent from the path taken by the Appellant," *id.* at 10.

Appellants' arguments are not persuasive of reversible error. "[A] reference may be said to teach away when a person of ordinary skill, upon reading the reference, would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path that was taken by the applicant." *In re Gurley,* 27 F.3d 551, 553 (Fed. Cir. 1994). But, "the mere disclosure of alternative designs does not teach away .... just because better alternatives exist in the prior art does not mean that an inferior combination is inapt for obviousness purposes." *In re Mouttet,* 686 F.3d 1322, 1334 (Fed. Cir. 2012) (quotation marks and citations omitted). As put by the Manual of Patent Examining Procedure, "[d]isclosed examples and preferred embodiments do not constitute a teaching away from a broader disclosure or nonpreferred embodiments." MPEP § 2123 (II) (citing *In re Susi,* 440 F.2d 442 (CCPA 1971)).

Here, as the Examiner aptly observed, Quon teaches that, notwithstanding the noted drawbacks, the measurement of plasma harmonics was known and successfully used to control plasma in "most plasma monitoring systems." Ans. 6. *See* Quon ¶ 10 ("Even with this limitation, these RF monitors are still used widely in semiconductor manufacturing . . ."); *id.* at ¶ 13 ([I]n most plasma monitoring methods, the impedance of the plasma is determined by measuring the current, voltage and the phase difference between the two at the fundamental frequency (or the first few harmonics) of the RF power source." Quon's teaching that the technique in question was widely used in plasma monitoring methods supports the Examiner's rationale that its use for plasma monitoring in Choi would have been obvious. Johnson's undisputed teaching that measuring harmonics was useful for controlling plasma in a CCP process further supports that result.

On this record, we are not persuaded of error in the Examiner's obviousness determination in Rejection I, which we therefore sustain.

II

Appellants do not particularly argue against Rejection II other than an implicit reliance on the arguments raised and discussed above in connection with Rejection I. App. Br. 12. Accordingly, we sustain Rejection II for the reasons given above in connection with Rejection I.

DECISION/ORDER

The Examiner's rejection of claims 1–20 under 35 U.S.C. § 103(a) is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a).

AFFIRMED